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### (54) Improvements in or relating to labelling apparatus

Etikettiermaschine

Etiqueteute

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**FR-A- 2 291 096 GB-A- 1 563 892  
US-A- 4 253 902**

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## Description

[0001] This invention relates to a labelling apparatus.

[0002] British Patent Specification No. 1563892 describes a labelling apparatus which separates a label from a longitudinally split carrier and then transfers the label to an article to be labelled by means which moves in a generally linear, reciprocal manner between a position in which a label is picked up and a position in which the label is applied to the article. These movements must be timed to coincide with the separation of a label from its carrier and with the presentation of an article to the labelling apparatus. The assembly which has been constructed to effect these movements is quite complicated and it requires careful engineering to relatively precise tolerance if reliable operation is to be obtained.

[0003] In addition the mechanism comprises a number of parts which perform a reciprocating movement for the purposes of label advance and transfer. Reciprocating systems cannot reliably be operated at very high speeds (above 250 to 300 feet/minute). Thus such mechanism places a constrain upon the speed at which articles can be labelled by the apparatus.

[0004] The present invention has been made from a consideration of the above-mentioned problems.

[0005] The aforesaid assembly of GB-A-1563892 is necessarily located on the side of the apparatus which limits the minimum width thereof. This in turn limits the minimum distance between adjacent labelling apparatus in a multiple labelling device having a plurality of labelling apparatus side by side for simultaneous labelling of items such as fruit being advanced in parallel streams. The normal distance between the centres of such streams is of the order of 130 mm which is far narrower than the minimum distance that can be obtained with the existing labelling machines arranged in side by side relationship.

[0006] US-A-4253902 and EP-A-0031383 disclose arrangements in which a rotating drum carries a number of handling devices which on rotation receive labels from a carrier strip and transfer these to objects to be labelled neither of these published documents show an arrangement in which the circumferential speed of the drum carrying the labels equals the speed of the carrier strip upon transfer of the labels to the drum.

[0007] The labels for the labelling apparatus are, as stated provided on a longitudinally split carrier. The carrier is preferably wound on a bobbin from which it can be unreel and advanced through the labelling apparatus. However, when the bobbin is emptied it can take several minutes to install a fresh bobbin and thread the carrier through the labelling apparatus. Similarly if the carrier should break or other problems develop with the labels and/or carrier the apparatus must be stopped while the broken carrier is re-threaded or other appropriate remedial action taken. During the time that the apparatus is inoperative for the above reasons, a large number of articles can pass the labelling apparatus without being

labelled.

[0008] According to the invention there is provided a high speed labelling apparatus for sequentially separating labels from a carrier strip and applying the labels to fruit, said apparatus comprising a label applying means, means for moving the label applying means between a label receiving position and a label applying position, rotating the label applying means in one direction continuously, means for separating a label from the carrier strip, means for mutually bringing the label applying means into contact with a label and means for advancing the carrier strip and the label applying means synchronously so that said label is separated from the carrier strip by the separating means in a direction substantially the same as the direction of movement of the label applying means into the label receiving position, means adapted to expand the label applying means at said label applying position for depositing a label on a fruit object and thereafter to retract the label applying means, wherein the means for mutually bringing the label applying means into contact with a label comprises means for advancing the carrier strip over the separating means to achieve a speed equalling the circumferential speed of the label applying means prior to moving the separating means from a first position remote from the label applying means to a second position adjacent the label applying means and means to return the separating means to the first position.

[0009] Preferably the labelling apparatus comprises labels supplied from a carrier strip including first and second longitudinally arranged carrier strip portions and a plurality of labels removably adhered therealong so as to bridge the carrier strip portions, wherein the means for separating the label from the carrier strip comprises a plate having first and second substantially planar surfaces and a plate edge including first and second non-aligned edge portions, transport means for moving said carrier strip across one of the planar surfaces, over the edge portions whereat the carrier is separated, and for moving the separated portions over further edge portions and along different paths across the other of the planar surfaces. The label applying means preferably includes a plurality of label handling means arranged at regular angular intervals therearound. With such an arrangement a label can be received from the label strip at the same time as a label received somewhat earlier, is applied to an item to be labelled. It will be appreciated that such an arrangement permits labelling at very much higher speeds than with previously known devices.

[0010] For labelling of items being advanced in a plurality of parallel streams the label applying means can include label handling means arranged at intervals axially along the applying means, there being an associated label supply arrangement for each axial interval where label handling means is located.

[0011] Sensing means is preferably provided for noting the presence or absence of an item to be labelled.

The sensing means can be used to control the supply of labels to the label applying means.

[0012] The label strip is preferably wound on a bobbin which is receivable in a housing, said housing also including the plate and the transport means and being adapted for removal from the labelling apparatus. The label strip can be supplied in other kinds of format for example fan-folded.

[0013] Specific embodiments of the invention will now be described by way of example with reference to the accompanying drawings in which:-

Fig.1 shows diagrammatically and in side elevation the general arrangement of a labelling apparatus;

Fig.2 is a front elevation of a part of the apparatus of Fig.1;

Fig.3 is a detail of part of the label strip transport means;

Fig.4 is an end elevation of the transport means of Fig.3;

Fig.5 shows the internal structure of the label applying means; and

Fig.6 is an under plan view of the separator plate.

[0014] Referring to the drawings the labelling apparatus, generally 10, comprises a cassette 12 having a spindle 14 on which a bobbin or reel 16 of label strip 18 is rotatably mountable. The label strip is of the kind which comprises a carrier strip 20 having labels 22 at regular intervals therealong. The outer face of each label 22 carries the appropriate information which may be printed thereon and the face adjacent the carrier is coated with contact adhesive. The carrier strip is adapted to be separated longitudinally along the centre line 24 which may be split for that purpose. The labels extend across the centre line 24. Examples of suitable label strips are described in British Patent Specification No.1563892.

[0015] The separation of the labels from the carrier strip is effected by substantially the same principles as disclosed in the above-mentioned British Patent Specification No.1563892. Thus the label strip is advanced by transport means 30 which will be described in detail later, across the underside of a separator plate 32 to a V-shaped notch 34 which defines edges 36 and 38. The separation line 24 is aligned with the apex of the notch 34 whereat the carrier is separated into two parts 20a and 20b. The carrier parts are led over the edges 36 and 38 respectively, laterally across the top of the plate 32 over outer edges 40 and 42 and then back along the underside of the plate parallel, but in the opposite direction, to the label strip 18.

[0016] As the label strip advances and the carrier is separated at the notch labels as indicated by the label referenced 44 are freed from the carrier.

[0017] Label strip 18 from the reel 16 is led around tension roller 50 and then around tape friction drum 52. The friction drum 52 is mounted on a shaft 54 which is rotatably mounted in the cassette 12. Haul-off rollers 56, 58 are also mounted on shaft 54, one on each side of the friction drum 52. A tape feed gear 53 is mounted on shaft 54 between the roller 58 and the friction drum 52. The spacing between the rollers 56 and 58 and the friction drum 52 preferably matches the spacing on the separator plate 32 between the label strip 18 and the separated carrier parts 20a and 20b. Each of said carrier parts is led around a separate guide roller 55 and then to the appropriate haul-off roller 56 or 58. The rollers 56 and 58 are provided with small projecting teeth or pins 60 which make positive engagement with the carrier parts. Each haul-off roller 56 and 58, is provided with a pair of spring biased pressure rollers 62, 64 which urge each carrier part into contact with the haul-off roller over which it is led. The carrier parts finally drop under gravity into a waste receiver 66. Other arrangements can be made for disposal of the waste carrier parts. For example the carrier waste can be drawn away through a vacuum tube and chopped by suitable means such as a rotary cutter.

[0018] Tension in the label strip is maintained by a pressure plate 70 which bears upon the strip as it passes along the underside of the separator plate. A pair of bolts 72 (only one of which is visible in Fig.5) extend through the plate 32 and are engaged in the plate 70. The spacing between bolts 72 is sufficient to permit the label strip to pass therebetween. A compression spring 74 surrounds each bolt 72 between the plate 32 and the head of the bolt so that the bolts are urged upwardly and hence the plate 70 is urged towards the underside of plate 32.

[0019] The plate 32 is pivotally mounted at the end 80 thereof adjacent the tape friction drum 52. A crank 82 pivotally mounted at 84 below plate 32 has one arm 85 provided with a roller 86 which engages the underside of plate 32. The other arm 87 of crank 82 has a cam follower roller 88 which engages a cam 90. A spring 91 in a housing 93 fixed to the cassette 12 is arranged to bear on the upper surface of plate 32 to urge it downwardly.

[0020] The cam 90 has a profiled surface which is repeated twice around the periphery. In other words the cam is designed to produce the same sequence of movements in the cam follower for every half revolution thereof. The cam 90 is fixed to the output hub 93 of solenoid actuated two stop wrap spring clutch 94.

[0021] A pawl 101 rotatably mounted on shaft 98 has one end 102, urged by spring 103 into engagement with a toothed collar 104 of a wrap spring clutch 96 mounted on drive shaft 106. The other end 105 of the pawl 101 engages one or other of two latch rollers 107 on the cam 90. A drive pulley 108 also fixed to clutch 96 is con-

ected by an endless belt 109 to a pulley 110 on driven shaft 112. A gear 114 is also provided on shaft 112 for driving engagement with the tape feed gear 53. It will be understood that gear trains may replace the arrangements of pulleys and belts.

[0022] The shafts 106 and 92 are driven by means (not shown) such as an electric motor or the drive for conveyor 154 which carries the items to be labelled.

[0023] Label applying means 120 comprises a body 121 having a plurality of faces 122, six in the illustrated embodiment and having an internal bore 123 of circular cross-section lined by a bush 125. A bellows 124 is fixed to each face by suitable means so as to surround a hollow projecting boss 126. A passageway 128 extends from each boss through the body 121 and through bush 125.

[0024] A tube 132 is mounted in the bush 125 so that the body 121 and bush 125 can rotate relative thereto. A second tube 135 is disposed within tube 132 thereby defining an annular space 130 between tubes 132 and 135. Bores 134 are formed in tube 132 whereby the passageways 128 can be brought into communication with space 130 as the body rotates.

[0025] A passageway 136 extends from the interior 138 of the tube 135 to the surface of the bore 123, there being no communication between the interior space 138 and the space 130.

[0026] The body 121 is mounted for rotation just below the separator plate 32 at the end thereof where labels are separated from the carrier. Rotation of the body is effected by an endless belt 140 which extends around a pulley 142 on the body and a pulley 144 on drive shaft 92. An air pump (not shown) is arranged to deliver air through inlet 150 into the interior space 138 and at the same time to evacuate from outlet 152 the air in the space 130.

[0027] The free end of each bellows is provided with a valve which permits air to be drawn into the bellows but which substantially closes when the air pressure within the bellows is greater than the external pressure. The particular kind of valve employed is a matter of choice.

[0028] As illustrated diagrammatically in Fig. 1 conveyor 154 for articles 156 to be labelled is arranged to move past the labelling apparatus below the label applying means 120. The conveyor is arranged to move the articles 156 at substantially equispaced intervals. Upstream of the label applying means an optical, or other suitable, article sensing device 158 is provided which produces a signal when an article 156 moves therepast. The sensing device is mounted in a head 162 and is connected to an electronic timing system which triggers operation of the solenoid operated wrap spring clutch 94.

[0029] The labelling apparatus operates as follows: Assume that the conveyor is advancing in the direction of arrow 166 and the label applying means is continuously rotated. When an article is sensed by the device 158 the solenoid operated wrap spring clutch 94 is ener-

gised so that the output hub 92 and cam 90 rotate one half revolution. Cam roller 107 lifts arm 105 which causes pawl 101 to be rotated anticlockwise thus releasing end 102 from clutch collar 104. Clutch 96 is thus engaged to drive via the tape, feed gear 53 in anticlockwise rotation through pulley 108, belt 109, pulley 110, shaft 112 and gear 114. The movement of the gear 53 causes shaft 54 to rotate also and therewith the haul-off rollers 56 and 58. The label strip from the reel is thus advanced over the separator plate and a label removed therefrom as explained earlier. Spring 103 returns pawl 101 into engagement with clutch collar 104 to prevent further advance of the label strip.

[0030] A very short time, (for example 5 milliseconds) after cam roller 107 has moved cam arm 105 to initiate label supply, the profile on cam 90 has rotated to permit clockwise rotation of crank 82 about 84 so that plate 32 drops downwardly under the action of spring 91 and places label in contact with a bellows on the label applying means. It will be appreciated from the foregoing that by slightly delaying the movement of the separator plate the label presented to the label applying means will be moving at the time that it contacts a bellows. The speed of movement of the label at the moment of contact with a bellows equals the linear speed of the bellows.

[0031] These movements are also adjusted to take place so that plate 32 is lowered when the label applying means has rotated to bring a bellows 124 into position therebeneath. With a label apparatus as illustrated with six bellows around the body 121 the aforesaid rotation of the label applying means is through 60°. At the same time a label is separated from the carrier and is, therefore, held by suction onto the free end of the bellows because of the reduced pressure therein which exists by virtue of the communication of the bellows through passage 128 with the space 130.

[0032] As successive articles 156 on the conveyor are sensed by device 158 the above sequence of movements is repeated. At the third cycle the article has now arrived below the label applying means and in register with the bellows that picked up a label as a result of the movements set in train by the sensing of that particular article. As can be seen in Fig. 5 the passageway 128 in the lowermost position connects the bellows through passageway 136 to the space 138. The bellows, therefore, in that position is expanded by the air pressure and the label carried by the bellows is pressed onto the article. The provision of a flexible bellows enables the labels to be applied to articles of different size and shape and to articles which may be rolling or rotating during their linear advance past the labelling apparatus. Further rotation of the body 121 causes the passageway 128 of the expanded bellows to be reconnected through an aperture 134 of the space 130 so that the bellows collapses.

[0033] It will be appreciated that the position of the sensing device 158 is chosen with regard to the number of steps that the label applying means takes between

receiving a label at the separator plate and arriving at the position where the label is to be applied to an article. In addition the speed of the conveyor and the movement of the labelling apparatus must be matched.

[0034] It will be apparent from the foregoing description that if no article is sensed by the sensing device 158 the solenoid 159 is not actuated and the cycle of operations is not initiated. The plate 32 remains in its upper position and no label is received by the label applying means.

[0035] The embodiment just described can be constructed with an overall width of the order of 100 mm. A compact multiple labelling machine for labelling parallel streams of articles can be made by disposing a plurality of labelling apparatus in side by side relationship as illustrated in Fig.2 with a common drive means. The bellows 124 for the plurality of labelling apparatus are preferably all disposed on a single body.

[0036] A further advantage of the embodiment just described is that the cassette 12 together with the tape transport means 30 and the plate 32 can be adapted for removal from the labelling apparatus. Thus when the reel 16 is exhausted the cassette can be removed and replaced with a fresh cassette with a full reel 16 already threaded up. This change can be effected very quickly without stopping the apparatus. At worst only a few articles will pass during the cassette change without being labelled.

[0037] Provision may also be made for adjusting the length of tape indexed in a cycle of operation as may be necessary for different sizes of label. If a large label is to be applied the tape must be advanced in each cycle through a greater distance than for a smaller label.

[0038] Although in the embodiment just described, bellows are provided for carrying labels from the separator plate to the objects to be labelled, other provision can be made which will produce the same result. For example instead of bellows cylinders preferably of lightweight material such as plastics can be provided which reciprocate in appropriate bushings in the label applying means 120 in response to vacuum and pressure as with the bellows. In other words the cylinders are retracted by means of the vacuum except at the label applying position where they are moved outwardly from the label applying means to deposit a label on an object.

#### Claims

1. A high speed labelling apparatus for sequentially separating labels (22) from a carrier strip (20) and applying the labels to fruit, said apparatus comprising a label applying means (120,124), means (140) for moving the label applying means (120,124) between a label receiving position and a label applying position, rotating the label applying means in one direction continuously, means (32) for separating a label from the carrier strip, means for mutually bringing the label applying means into contact

with a label and means for advancing the carrier strip and the label applying means (120,124) synchronously so that said label is separated from the carrier strip by the separating means (32) in a direction substantially the same as the direction of movement of the label applying means (120,124) into the label receiving position, means adapted to expand the label applying means (120,124) at said label applying position for depositing a label on a fruit object and thereafter to retract the label applying means, wherein the means for mutually bringing the label applying means into contact with a label comprises means (56,58) for advancing the carrier strip over the separating means to achieve a speed equalling the circumferential speed of the label applying means (120,124) prior to moving the separating means (32) from a first position remote from the label applying means (120,124) to a second position adjacent the label applying means (120,124) and means (82) to return the separating means (32) to the first position.

2. A labelling apparatus as claimed in Claim 1, and comprising labels (22) supplied from a carrier strip (20) including first and second longitudinally arranged carrier strip portions (20a,20b) and a plurality of labels removably adhered therealong so as to bridge the carrier strip portions, wherein the means for separating the label from the carrier strip comprises a plate (32) having first and second substantially planar surfaces and a plate edge including first and second non-aligned edge portions (36,38), transport means (30) for moving said carrier strip across one of the planar surfaces, over the edge portions (36,38) whereat the carrier is separated, and for moving the separated portions (20a,20b) over further edge portions (40,42) and along different paths across the other of the planar surfaces.

3. A labelling apparatus as claimed in any preceding claim wherein said label applying means (120,124) includes a plurality of label handling means (124).

4. A labelling apparatus as claimed in any preceding claim, wherein sensing means (158) is provided for noting the presence of an object to be labelled.

5. A labelling apparatus as claimed in Claim 4, wherein the sensing means (158) is adapted to control delivery of labels to the label applying means.

6. A labelling apparatus as claimed in any preceding claim wherein the supply of labels is stored in a housing (12).

7. A labelling apparatus as claimed in Claim 6,

wherein the housing (12) and the means (30) for supplying labels to the label applying means are detachable from the rest of the apparatus.

8. A labelling apparatus as claimed in Claim 7, wherein the housing (12) and means (30) for supplying labels form a unit which can be loaded with label strip when detached from the rest of the apparatus and wherein a loaded unit can be substituted for an empty unit on the apparatus without stopping the apparatus.
9. A labelling apparatus according to Claim 3, wherein each label handling means (124) comprises a bellows mounted on the label applying means.
10. A labelling apparatus as claimed in any one of claims 3 to 9, wherein the label handling means (124) is connectable at the label receiving position to means for reducing the pressure therewithin.
11. A labelling apparatus as claimed in any one of claims 3 to 10 wherein the label handling means (124) is connectable, at the label receiving position and between the label receiving position and the label applying position, to means for reducing the pressure therewithin.
12. A labelling apparatus as claimed in any one of claims 3 to 11 wherein the label handling means (124) is connectable, at the label applying position to means for increasing the pressure therewithin.
13. A labelling apparatus as claimed in Claims 11 and 12, wherein communicating means is provided between the interior and the exterior of the label handling means (124) whereby a label presented to the communicating means on said label handling means at the label receiving position is held thereon by the underpressure therein and whereby at the label applying position the bellows is extended by the overpressure therein and said label is applied to the object to be labelled.
14. A labelling apparatus as claimed in any preceding claim, comprising a plurality of label applying means (124).
15. A labelling apparatus as claimed in Claim 14 wherein each label applying means is provided with a separate means for supplying labels thereto.

#### Patentansprüche

1. Hochgeschwindigkeits-Etikettiermaschine zum aufeinanderfolgenden Trennen von Etiketten (22) von einem Trägerstreifen (20) und zum Aufbringen der Etiketten auf Obst, wobei die genannte Maschine

ein Etiketten-Auftragemittel (120, 124), ein Mittel (140) zum Bewegen des Etiketten-Auftragemittels (120, 124) zwischen einer Etikettenaufnahmestellung und einer Etikettenauftragstellung durch ununterbrochenes Drehen des Etiketten-Auftragemittels in eine Richtung, ein Mittel (32) zum Trennen einer Etikette von dem Trägerstreifen, ein Mittel, um das Etiketten-Auftragemittel in gegenseitigen Kontakt mit einer Etikette zu bringen, und ein Mittel, um den Trägerstreifen und das Etiketten-Auftragemittel (120, 124) synchron so anzutreiben, daß die genannte Etikette von dem Trägerstreifen durch das Trennmittel (32) in einer Richtung getrennt wird, die im wesentlichen die gleiche ist wie die Bewegungsrichtung des Etiketten-Auftragemittels (120, 124) in die Etikettenaufnahmestellung, und ein Mittel aufweist, das dazu eingerichtet ist, das Etiketten-Auftragemittel (120, 124) in der genannten Etikettenauftragstellung auszufahren, um eine Etikette an ein Obsterzeugnis anzulegen, und danach das Etiketten-Auftragemittel zurückzuziehen, wobei das Mittel, um das Etiketten-Auftragemittel in gegenseitigen Kontakt mit einer Etikette zu bringen, ein Mittel (56, 58), um den Trägerstreifen über das Trennmittel so zu bewegen, daß er eine Geschwindigkeit erreicht, die gleich der Umfangsgeschwindigkeit des Etiketten-Auftragemittels (120, 124) ist, bevor das Trennmittel (32) aus einer ersten, von dem Etiketten-Auftragemittel (120, 124) entfernten Stellung in eine zweite, an das Etiketten-Auftragemittel (120, 124) angrenzende Stellung bewegt wird, sowie ein Mittel (82) aufweist, um das Trennmittel (32) in die erste Stellung zurückzubringen.

2. Etikettiermaschine wie in Anspruch 1 beansprucht und mit Etiketten, (22), die von einem Trägerstreifen (20) zugeführt werden, der erste und zweite in Längsrichtung angeordnete Trägerstreifenteile (20a, 20b) und eine Mehrzahl von Etiketten beinhaltet, die entlang desselben abnehmbar so anhaften, daß sie die Trägerstreifenteile überbrücken, worin das Mittel zum Trennen der Etikette vom Trägerstreifen eine Platte (32), die eine erste und eine zweite im wesentlichen ebene Oberfläche und einen Plattenrand aufweist, der erste und zweite, nicht-fluchtende Randteile (36, 38) beinhaltet, und ein Transportmittel (30) aufweist, um den genannten Trägerstreifen über eine der ebenen Oberflächen, über die Randteile (36, 38), woran der Träger getrennt wird, hinweg zu bewegen und um die getrennten Teile (20a, 20b) über weitere Randteile (40, 42) und längs unterschiedlicher Bahnen über die andere der ebenen Oberflächen zu bewegen.

3. Etikettiermaschine wie in irgendeinem vorausgehenden Anspruch beansprucht, bei der das genannte Etiketten-Auftragemittel (120, 124) eine

Mehrzahl Etiketten-Handhabemittel (124) beinhaltet.

4. Etikettiermaschine wie in irgendeinem vorausgehenden Anspruch beansprucht, bei der ein Sensormittel (158) vorgesehen ist, um das Vorhandensein eines zu etikettierenden Gegenstandes festzustellen. 5
5. Etikettiermaschine wie in Anspruch 4 beansprucht, bei der das Sensormittel (158) dazu eingerichtet ist, die Zufuhr von Etiketten zum Etiketten-Auftragemittel zu steuern. 10
6. Etikettiermaschine wie in irgendeinem vorausgehenden Anspruch beansprucht, bei der der Vorrat an Etiketten in einem Gehäuse (12) gespeichert ist. 15
7. Etikettiermaschine wie in Anspruch 6 beansprucht, bei der das Gehäuse (12) und das Mittel (30) zum Zuführen von Etiketten zu dem Etiketten-Auftragemittel vom Rest der Maschine abnehmbar sind. 20
8. Etikettiermaschine wie in Anspruch 7 beansprucht, bei der das Gehäuse (12) und das Mittel (30) zum Zuführen der Etiketten eine Einheit bilden, die mit Etikettenstreifen beladen werden kann, wenn sie vom Rest der Maschine abgenommen ist, und bei der eine leere Einheit an der Maschine durch eine beladene Einheit ersetzt werden kann, ohne die Maschine stillzusetzen. 25 30
9. Etikettiermaschine gemäß Anspruch 3, bei der jedes Etiketten-Handhabemittel (124) einen Balg aufweist, der an dem Etiketten-Auftragemittel angeordnet ist. 35
10. Etikettiermaschine wie in irgendeinem der Ansprüche 3 bis 9 beansprucht, bei der das Etiketten-Handhabemittel (124) an der Etikettenaufnahmestelle mit einem Mittel zur Verringerung des darin herrschenden Druckes verbindbar ist. 40
11. Etikettiermaschine wie in irgendeinem der Ansprüche 3 bis 10 beansprucht, bei der das Etiketten-Handhabemittel (124) an der Etikettenaufnahmestelle und zwischen der Etikettenaufnahmestelle und der Etikettenauftragestelle mit einem Mittel zur Verringerung des darin herrschenden Druckes verbindbar ist. 45 50
12. Etikettiermaschine wie in irgendeinem der Ansprüche 3 bis 11 beansprucht, bei der das Etiketten-Handhabemittel (124) an der Etikettenauftragestelle mit einem Mittel zur Erhöhung des darin herrschenden Druckes verbindbar ist. 55
13. Etikettiermaschine wie in den Ansprüchen 11 und

12 beansprucht, bei der ein Verbindungsmittel zwischen dem Inneren und dem Äußeren des Etiketten-Handhabemittels (124) vorgesehen ist, wodurch eine Etikette, die dem Verbindungsmittel an dem genannten Etiketten-Handhabemittel in der Etikettenaufnahmestelle dargeboten wird, daran durch den darin herrschenden Unterdruck gehalten ist und wodurch in der Etikettenauftragestelle der Balg durch den darin befindlichen Überdruck ausgedehnt wird und die genannte Etikette auf den zu etikettierenden Gegenstand aufgetragen wird.

14. Etikettiermaschine wie in irgendeinem vorausgehenden Anspruch beansprucht, mit einer Mehrzahl von Etiketten-Auftragemitteln (124).
15. Etikettiermaschine wie in Anspruch 14 beansprucht, bei der jedes Etiketten-Auftragemittel mit einem gesonderten Mittel, um ihm Etiketten zuzuführen, versehen ist.

#### Revendications

1. Appareil d'étiquetage à grande vitesse destiné à séparer séquentiellement des étiquettes (22) d'une bande de support (20) et à appliquer les étiquettes sur des fruits, ledit appareil comprenant un moyen d'application d'étiquette (120, 124), un moyen (140) destiné à déplacer le moyen d'application d'étiquette (120, 124) entre une position de réception d'étiquette et une position d'application d'étiquette en faisant tourner continuellement le moyen d'application d'étiquette dans un seul sens, un moyen (32) destiné à séparer une étiquette de la bande de support, un moyen destiné à amener le moyen d'application d'étiquette en contact mutuel avec une étiquette et un moyen destiné à faire avancer synchroniquement la bande de support et le moyen d'application d'étiquette (120, 124) de sorte que ladite étiquette est séparée de la bande de support par le moyen de séparation (32) dans une direction sensiblement identique à la direction de déplacement du moyen d'application d'étiquette (120, 124) vers sa position de réception d'étiquette, un moyen apte à déployer le moyen d'application d'étiquette (120, 124) dans ladite position d'application d'étiquette pour déposer une étiquette sur un fruit visé et à rétracter ensuite le moyen d'application d'étiquette, dans lequel le moyen destiné à amener le moyen d'application d'étiquette en contact mutuel avec une étiquette comprend un moyen (56, 58) destiné à faire avancer la bande de support au-dessus du moyen de séparation de façon à atteindre une vitesse égale à la vitesse circonférentielle du moyen d'application d'étiquette (120, 124) avant de déplacer le moyen de séparation (32) d'une première position éloignée du moyen d'application d'étiquette (120, 124) à une deuxième position

adjacente au moyen d'application d'étiquette (120, 124) et un moyen (82) qui ramène le moyen de séparation (32) vers la première position.

2. Appareil d'étiquetage selon la revendication 1, comprenant en outre des étiquettes (22) fournies par une bande de support (20) qui comprend des première et deuxième parties (20a, 20b) de bande de support disposées en longueur et une pluralité d'étiquettes qui adhèrent de façon détachable le long de cette bande de façon à chevaucher les parties de bande de support, le moyen destiné à séparer une étiquette de la bande de support comprenant en outre une plaque (32) présentant des première et deuxième surfaces sensiblement planes et un bord de plaque comprenant des première et deuxième parties de bord (36, 38) non alignées, un moyen de transport (30) destiné à déplacer ladite bande de support d'un côté à l'autre de l'une des surfaces planes, au-dessus des parties de bord (36, 38) au niveau desquelles la bande se sépare, et à déplacer les parties séparées (20a, 20b) au-dessus d'autres parties de bord (40, 42) et suivant des trajets différents d'un côté à l'autre de l'autre des surfaces planes.

3. Appareil d'étiquetage selon l'une quelconque des revendications précédentes, dans lequel ledit moyen d'application d'étiquette (120, 124) comprend une pluralité de moyens (124) de manipulation d'étiquettes.

4. Appareil d'étiquetage selon l'une quelconque des revendications précédentes, comprenant en outre un moyen de détection (158) destiné à constater la présence d'un objet à étiqueter.

5. Appareil d'étiquetage selon la revendication 4, dans lequel le moyen de détection (158) est apte à commander la distribution d'étiquettes au moyen d'application d'étiquette.

6. Appareil d'étiquetage selon l'une quelconque des revendications précédentes, dans lequel la provision d'étiquettes est stockée dans un boîtier (12).

7. Appareil d'étiquetage selon la revendication 6, dans lequel le boîtier (12) et le moyen (30) destiné à fournir des étiquettes au moyen d'application d'étiquette sont détachables du reste de l'appareil.

8. Appareil d'étiquetage selon la revendication 7, dans lequel le boîtier (12) et le moyen (30) destiné à fournir des étiquettes forment une unité dans laquelle on peut charger une bande d'étiquettes quand elle est détachée du reste de l'appareil, et dans lequel on peut remplacer sur l'appareil une unité vide par une unité chargée sans arrêter l'appareil.

9. Appareil d'étiquetage selon la revendication 3, dans lequel chaque moyen de manipulation d'étiquette (124) comprend un soufflet monté sur le moyen d'application d'étiquette.

10. Appareil d'étiquetage selon l'une quelconque des revendications 3 à 9, dans lequel le moyen de manipulation d'étiquette (124) est susceptible d'être connecté, au niveau de la position de réception d'étiquette, à un moyen destiné à réduire la pression en son sein.

11. Appareil d'étiquetage selon l'une quelconque des revendications 3 à 10, dans lequel le moyen de manipulation d'étiquette (124) est susceptible d'être connecté, au niveau de la position de réception d'étiquette et entre la position de réception d'étiquette et la position d'application d'étiquette, à un moyen destiné à réduire la pression en son sein.

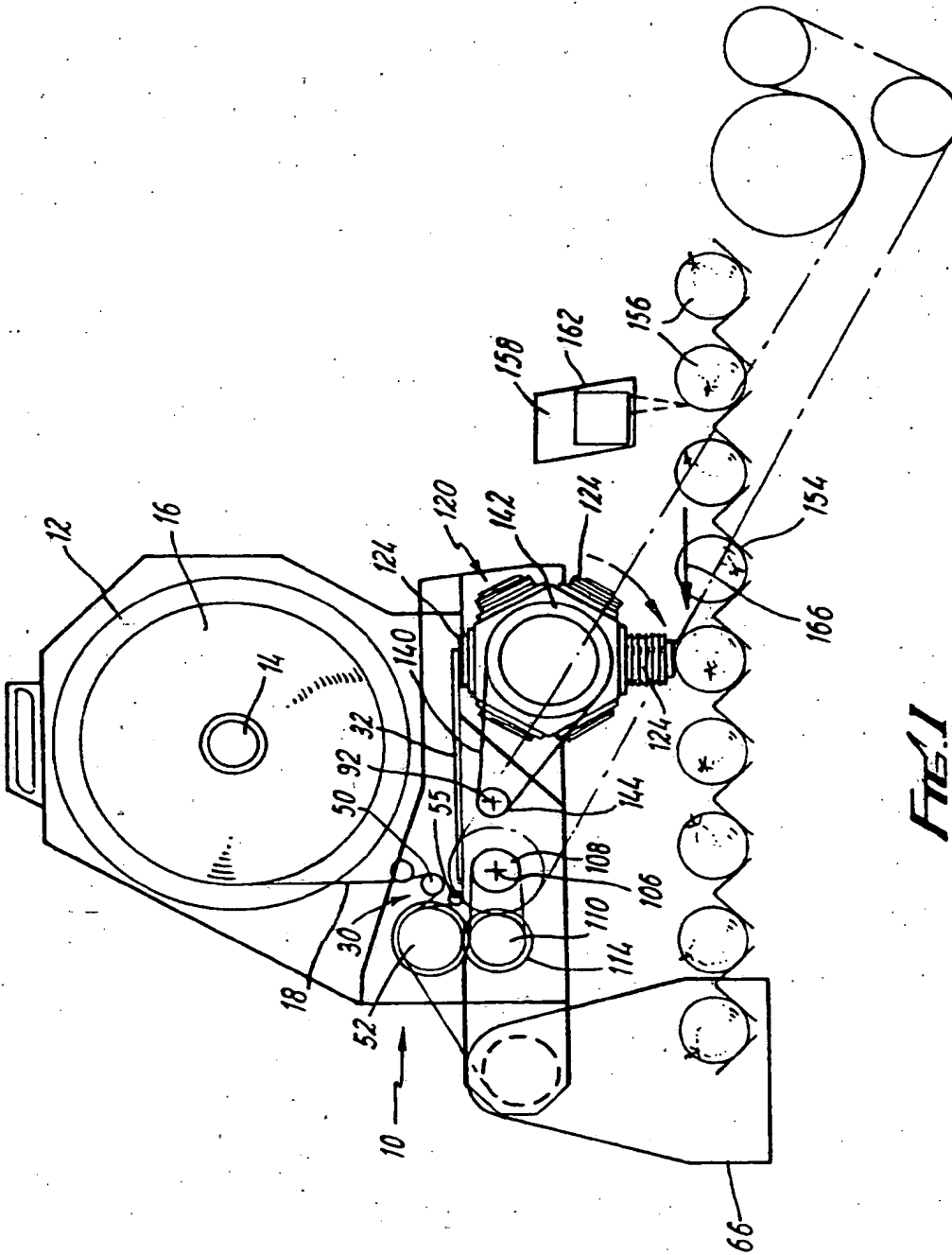
12. Appareil d'étiquetage selon l'une quelconque des revendications 3 à 11, dans lequel le moyen de manipulation d'étiquette (124) est susceptible d'être connecté, au niveau de la position d'application d'étiquette, à un moyen destiné à augmenter la pression en son sein.

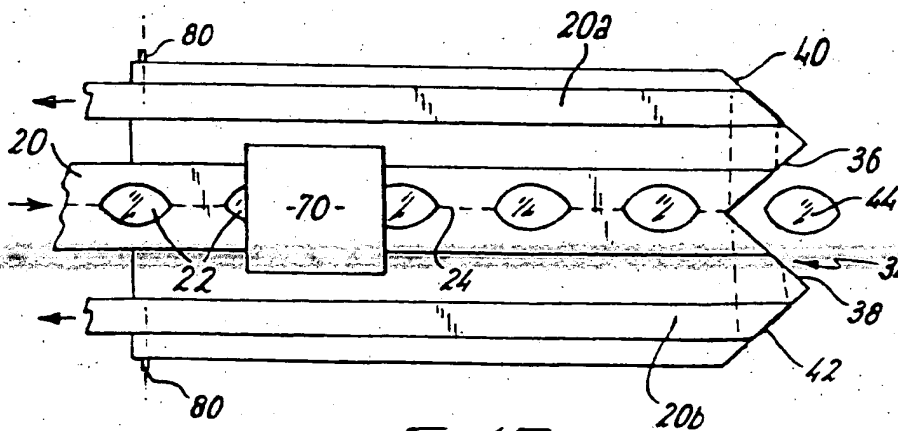
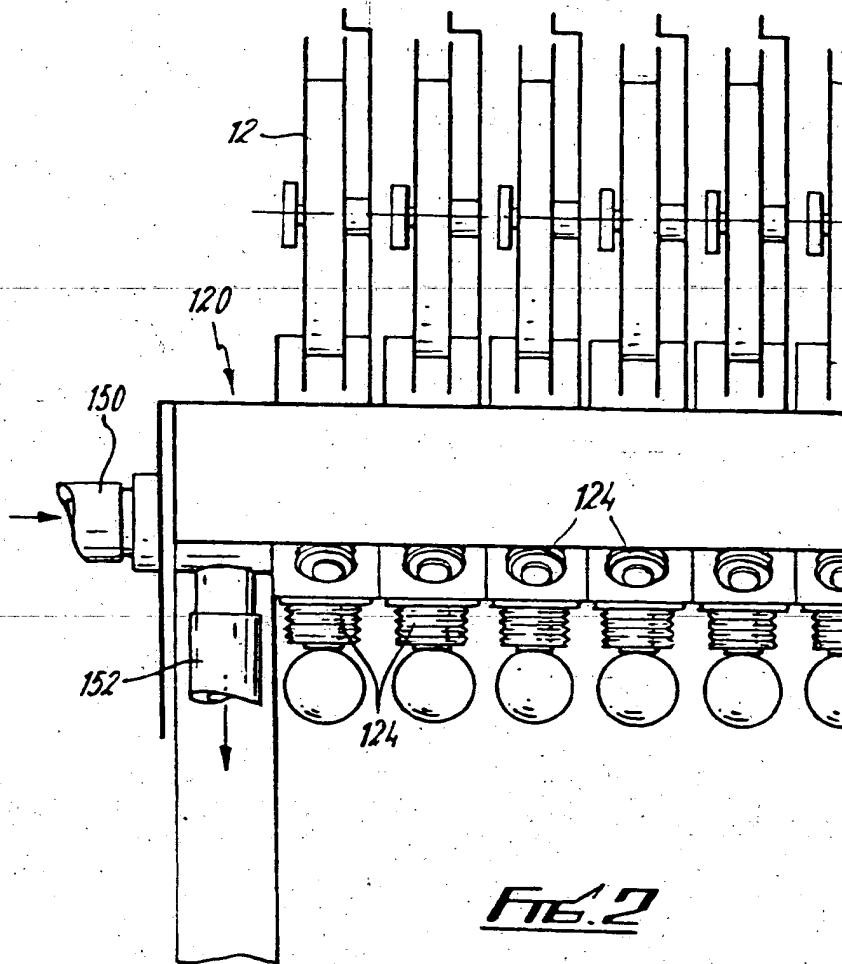
13. Appareil d'étiquetage selon les revendications 11 et 12, dans lequel un moyen de communication est prévu entre l'intérieur et l'extérieur du moyen de manipulation d'étiquette (124), par lequel une étiquette présentée au moyen de communication dudit moyen de manipulation d'étiquette au niveau de la position de réception d'étiquette est retenue sur lui par la sous-pression régnant en son sein, et par lequel le soufflet est étendu au niveau de la position d'application d'étiquette par la surpression régnant en son sein et ladite étiquette est appliquée sur l'objet à étiqueter.

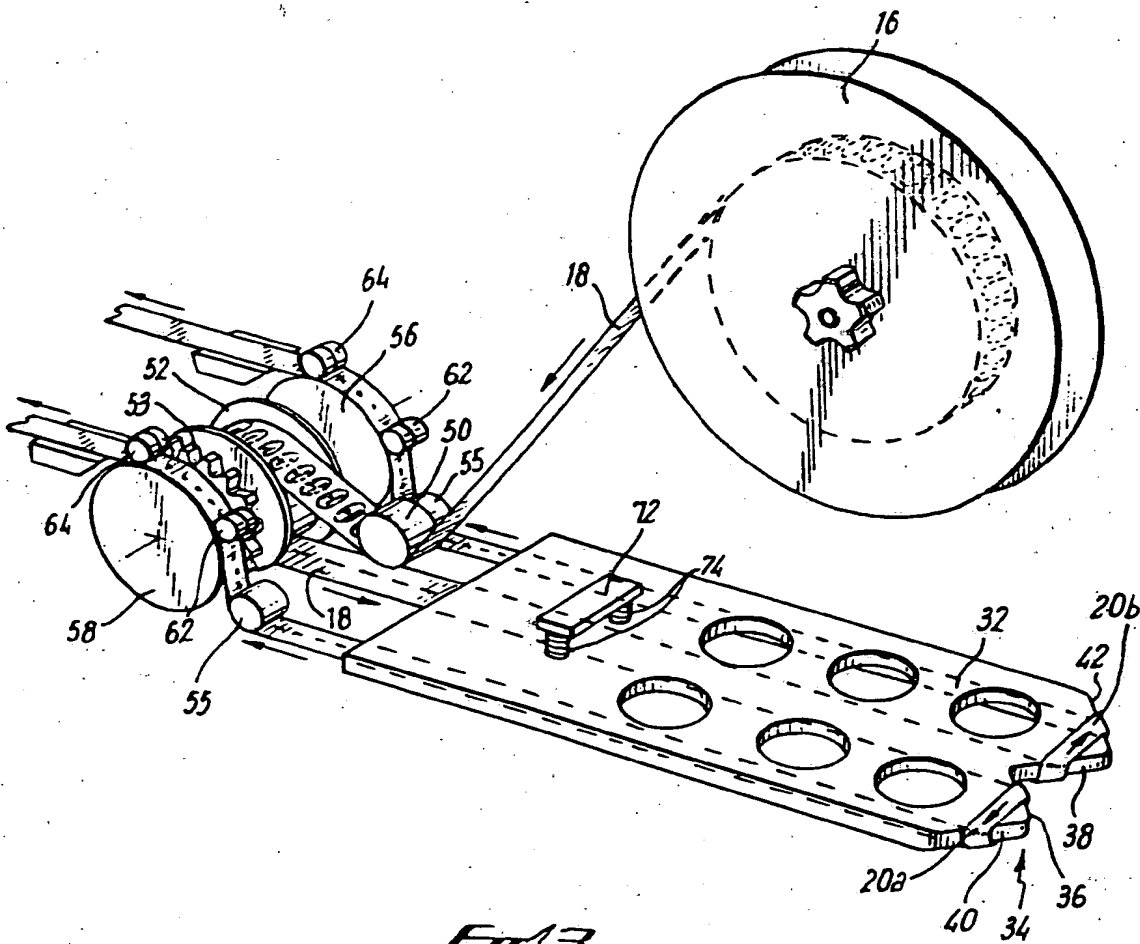
14. Appareil d'étiquetage selon l'une quelconque des revendications précédentes, comprenant une pluralité de moyens d'application d'étiquette (124).

15. Appareil d'étiquetage selon la revendication 14, dans lequel chaque moyen d'application d'étiquette est muni d'un moyen individuel destiné à lui fournir des étiquettes.









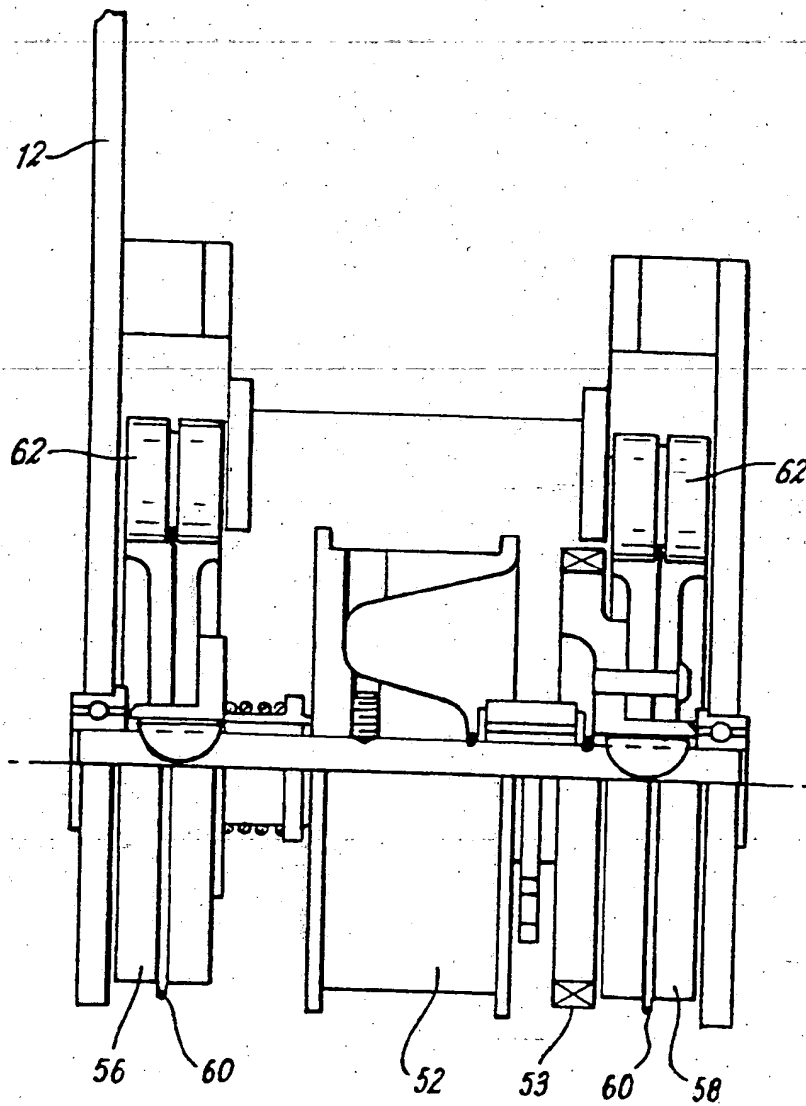
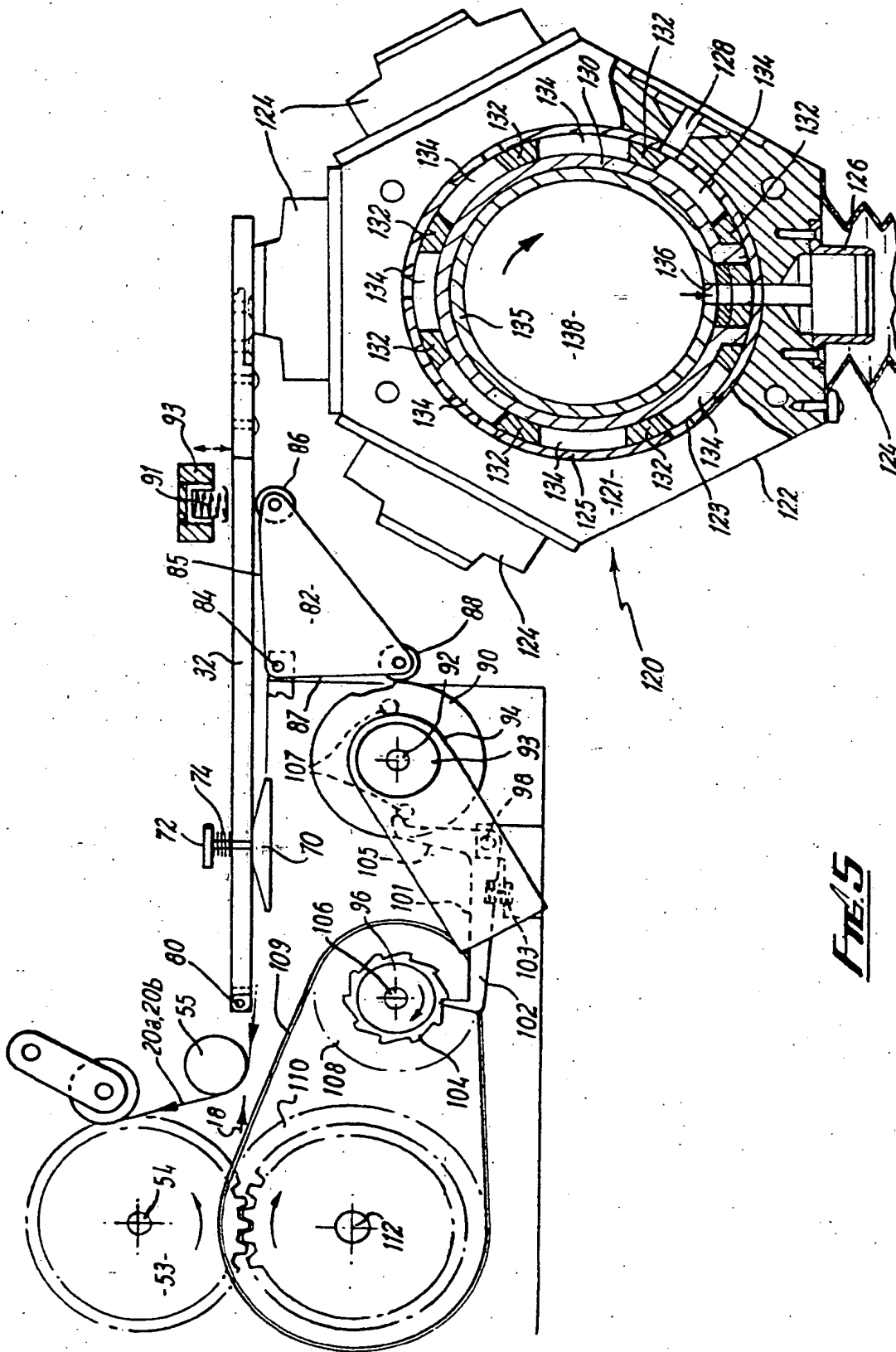


Fig. 4



**FIE/S**

